

S46-01

INSOMNIA AND BRAIN FUNCTION

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Affecting 6-11% of the population, insomnia is the most common complaint in general practice. While insomnia is a major risk factor for health problems, its brain mechanisms have hardly been explored (Front Neurosci 2009;3:436). We applied brain imaging to find causes and consequences of insomnia. While some deviations recover after therapy, e.g. increased complexity cost in response times and attenuated prefrontal BOLD activation during word fluency (J Sleep Res 2008;17:335; Sleep 2008;31:1271), others don't and may be heritable traits involved in the risk of developing insomnia. Using TMS, we found an abnormal intracortical excitability and facilitation (ICF) that did not recover after treatment (Biol Psychiatry 2010;68:950). This finding may be the first endophenotype allowing for genotyping, because ICF is among the most heritable human traits (J Neurosci 2009;29:8897). MRI voxel based morphometry (VBM) showed a lower volume of gray matter in areas that are part of the default mode network including the orbitofrontal cortex, where volume showed a strong negative correlation with insomnia severity (Biol Psychiatry 2010;67:182). This area seems involved in disturbed hedonic evaluation, which we indeed found to be disturbed (Sleep 2008;31:1301). Concertedly, we found new angles on mechanisms of vulnerability. We now look for research partners and volunteers for extensive web-based characterization of phenotypes of good and poor sleepers (www.sleepregistry.eu).